

REMARKS

The specification has been reviewed, and clerical errors of the specification have been amended.

In paragraph 2 of the Action, the specification was objected to because of the informalities. In view of the objections, the specification has been amended to correct the informalities.

In paragraph 4 of the Action, claim 5 was rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. In view of the rejection, claim 5 has been canceled. In paragraph 6 of the Action, claims 6, 7, and 18 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to point out and distinctly claim the subject matter. In view of the rejection, claims 6 and 7 have been canceled, and claim 18 has been amended.

In paragraph 8 of the Action, claims 1-14 and 19-21 were rejected under 35 U.S.C. 102(e) as being anticipated by Yokota et al. (U.S. Patent No. 6,398,669) and Roberts et al. (U.S. Patent No. 6,313,335). In paragraph 9 of the Action, claims 11, 15, 16, and 19-21 were rejected under 35 U.S.C. 102(b) as being anticipated by Sugimoto et al. (U.S. Patent No. 5,725,443). In paragraph 10 of the Action, claims 11, 12, 14, 17 and 18 were rejected under 35 U.S.C. 102(e) as being anticipated by Nakanishi et al. (U.S. Patent No. 6,313,249). Further, in paragraph 11 of the Action, claims 11, 12, 14, 17 and 18 were rejected under 35 U.S.C. 102(e) as being anticipated by Ito et al. (U.S. Patent No. 6,573,320).

In view of the rejections, claims 1-10 have been canceled. Claim 11 has been amended to include the limitations of claims 12, 13 and 15, and claims 12, 13 and 15 have been canceled. New claims 22 and 23 have been added to include further limitations.

As cited in claim 11, a clear paint for golf balls consists essentially of a base polymer including a polyurethane resin, and a graft polymer including a comb polymer. The comb polymer has a backbone portion formed of an acrylic resin and a branch portion formed of polyorganosiloxane. Further, the backbone portion has at least one hydroxyl group.

In claim 11, the clear paint is formed of two different

components, namely the base polymer and the graft polymer. The base polymer includes the polyurethane resin. The graft polymer includes the comb polymer. The comb polymer has two distinct portions, namely the backbone portion formed of the acrylic resin and the branch portion formed of the polyorganosiloxane. The backbone portion of the comb polymer has at least one hydroxyl group for reacting with the base polymer so that the graft polymer is bonded to the base polymer in a final state of the clear paint. The branch portion formed of the polyorganosiloxane imparts desirable properties such as wear resistance and low friction to the clear paint. The backbone portion formed of the acrylic resin provides the comb polymer with compatibility with the base polymer. The graft polymer does not easily leach out as the graft polymer is bonded to the base polymer through the backbone portion.

Yokota et al. have disclosed that a modified polysiloxane has at least one hydroxyl group or carboxyl group at one end thereof, and the polysiloxane chain is directly grafted to the main chain of the paint and thus can be properly aligned with the polymer main chain of the paint. Yokota et al. has further disclosed that the paint is preferably formed of a polyacrylic-based polyol resin having a main chain and several hydroxyl groups and an isocyanate component. According to Yokota et al., when modified polysiloxane containing at least one isocyanate group is blended, the modified polysiloxane is preferably blended in advance or simultaneously with the paint or each component thereof. The examiner indicated that when modified polysiloxane containing at least one isocyanate group is blended, a comb polymer is formed.

In the invention, the clear paint is formed of the two different components, namely the base polymer and the graft polymer. The base polymer is the polyurethane resin, which is similar to the polyacrylic-based polyol resin disclosed in Yokota et al. The graft polymer is the comb polymer, which has the two distinct portions, namely the backbone portion formed of the acrylic resin and the branch portion formed of the polyorganosiloxane. The backbone portion of the comb polymer has at least one hydroxyl group for reacting with the base polymer so

that the graft polymer is bonded to the base polymer in a final state of the clear paint. In Yokota et al., the polysiloxane chain is directly grafted to the main chain of the paint when the polysiloxane is blended with the paint. In the invention, the graft polymer having the polysiloxane chain is added to the base polymer. In Yokota et al., as the examiner indicated, when the polysiloxane containing at least one isocyanate group is blended, the polysiloxane reacts with the paint having several hydroxyl groups to form a comb polymer. In the invention, the comb polymer is formed in advance and has at least one hydroxyl group. In Yokota et al., there is no disclosure or suggestion of using the comb polymer having the two distinct portions, namely the backbone portion formed of the acrylic resin having at least one hydroxyl group and the branch portion formed of the polyorganosiloxane. Therefore, Yokota et al. does not anticipate the Invention.

Sugimoto et al. have disclosed that the isocyanate group-containing organic modified polysiloxane has a polysiloxane chain and a long alkyl group or polyester group grafted with the polysiloxane chain. The alkyl group has at least one isocyanate group. The isocyanate group-containing organic modified polysiloxane is formulated into the urethane paint.

In the invention, the graft polymer is the comb polymer, which has the backbone portion formed of the acrylic resin and the branch portion formed of the polyorganosiloxane. The backbone portion of the comb polymer has at least one hydroxyl group for reacting with the base polymer so that the graft polymer is bonded to the base polymer in a final state of the clear paint.

In Sugimoto et al., the isocyanate group-containing organic modified polysiloxane has the polysiloxane chain, which is similar to the invention, and the long alkyl group or polyester group having at least one isocyanate group. In the invention, the backbone portion of the graft polymer is formed of the acrylic resin and has at least one hydroxyl group. The backbone portion formed of the acrylic resin provides the graft polymer with compatibility with the base polymer. In Sugimoto et al., there is no disclosure or suggestion that a backbone portion of a graft

polymer is formed of an acrylic resin and has a hydroxyl group. Therefore, Sugimoto et al. does not anticipate the Invention.

Nakanishi et al. has disclosed a graft copolymer having a backbone formed of a carbon-carbon backbone chain and a grafting moiety comprising a plurality of organopolysiloxane residues.

In the invention, the clear paint is formed of the base polymer and the graft polymer. The base polymer includes the polyurethane resin. The graft polymer includes the comb polymer, which has distinct backbone portion formed of the acrylic resin and the branch portion formed of the polyorganosiloxane. The backbone portion of the comb polymer has at least one hydroxyl group for reacting with the base polymer so that the graft polymer is bonded to the base polymer in a final state of the clear paint. In Nakanishi et al., there is no disclosure or suggestion that the graft polymer has the backbone portion having at least one hydroxyl group for reacting with the base polymer formed of the polyurethane resin. Therefore, Nakanishi et al. does not anticipate the Invention.

Ito et al. has disclosed an acrylic resin composition to be used as a clear paint. An example of the composition includes a polysiloxane having a methacrylate group at an end thereof. Ito et al. has disclosed that the methacrylate terminated polysiloxane is reacted with methyl methacrylate to form a comb polymer having an acrylic polymer backbone.

In the invention, the clear paint is formed of the base polymer including polyurethane resin, and the graft polymer including the comb polymer, which has backbone portion formed of the acrylic resin and the branch portion formed of the polyorganosiloxane. The backbone portion of the comb polymer has at least one hydroxyl group for reacting with the base polymer so that the graft polymer is bonded to the base polymer in a final state of the clear paint. In Ito et al., there is no disclosure or suggestion that the graft polymer has the backbone portion having at least one hydroxyl group for reacting with the base polymer formed of the polyurethane resin. Therefore, Ito et al. does not anticipate the invention.

As explained above, cited references do not disclose or suggest the features of the invention. Even if the references are combined, the invention is not obvious.

Reconsideration and allowance are earnestly solicited.

A one month extension of time is hereby requested. A check in the amount of \$110.00 is attached herewith for one month extension of time.

Respectfully submitted,

KANESAKA AND TAKEUCHI

by 

Manabu Kanesaka
Reg. No. 31,467
Agent for Applicants

1423 Powhatan Street
Alexandria, VA 22314
(703) 519-9785